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AUTHOR Palmer, Bruce A.
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ABSTRACT

This paper presents a method for higher education faculty and staff to assess pension plan objectives by determining a retirement income replacement ratio to maintain the salary-based preretirement standard of living. The paper describes the RETIRE Project which researches income replacement using the federal government's annual "Consumer Expenditure Survey" to estimate individual savings and other expenditure variables incorporated into the Project's income replacement formulas. The income replacement ratio formula's components include preretirement gross pay, preretirement taxes, preretirement savings, postretirement taxes, work-related expenses, and net change in age-related expenditures. A central section looks in detail at how the ratio formula works with a single individual and a married couple under various conditions. Two detailed tables and two figures illustrate the analysis. Further sections discuss savings rates and their effect on income replacement ratios and the effects of taxing 85 percent of social security benefits (currently proposed by the Clinton Administration). A conclusion notes that research findings indicate that those retiring in 1993 need about 69 to 82 percent of final-year salary to sustain their preretirement standard of living. (Contains 13 references.) (JB)

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Planning for Retirement: Using Income Replacement Ratios in Setting Retirement Income Objectives

In this issue of Research Dialogues, *we present an article on the subject of retirement income replacement ratios by Bruce A. Palmer, Ph.D., professor of risk management and insurance, Georgia State University. Based on Professor Palmer's extensive work in this area, the article describes a method of determining a retirement income replacement ratio designed to maintain the salary-based preretirement standard of living. The replacement ratio analysis can be used by college and university faculty, staff, and administrators in assessing pension plan objectives, and by individuals in their financial planning for retirement.*

Introduction

Educators, like most other American workers, want to achieve a financially secure retirement. The first step in attaining this goal is to establish appropriate retirement income objectives. Today, income replacement ratios are the most common approach to setting realistic retirement income targets.

The relatively recent focus on income replacement (and income replacement ratios) began with the 1981 release of a report by the President's Commission on Pension Policy (PCPP).[1] The PCPP, formed during President Jimmy Carter's administration, addressed several public policy matters pertaining to retirement-related issues, including the determination of appropriate income replacement ratios.

Heightened interest in the income replacement issue occurred in 1986 with the passage of the Tax Reform Act (TRA '86), which incorporated several important changes in the federal income tax laws affecting individuals. The most notable changes, in terms of their effects on income replacement ratios, were reductions both in the number of income tax brackets and in the overall marginal tax rates.

The enactment of TRA '86 and subsequent legislation created a need for new and continuing research on income replacement ratios and related retirement income issues. To fill this gap, the Alexander and Alexander Consulting Group and the Center for Risk Management and Insurance Research, Georgia State University, teamed together to initiate ongoing research, now known as the RETIRE Project.[2] The latest report of the RETIRE Project was released recently.[3] Earlier reports were released in 1988 and 1991.[4]

The cornerstone of the RETIRE Project's research on income replacement is the U.S. government's annual *Consumer Expenditure Survey*.[5] These data are used to estimate individual savings and certain other expenditure variables that are incorporated into the RETIRE Project's income replacement formulas. Federal and state income taxes, together with Social Security (FICA) taxes, are also included in the formulas for determining income replacement ratios.

A Definition of Income Replacement

Potentially, income replacement and income replacement ratios can be defined in one of several ways. The measure that has received the most widespread acceptance today is designed to achieve *full income replacement* through allowing individuals and their families to continue their preretirement standard of living into their retirement years. Its retirement income objectives reflect the belief that most individuals wish to avoid having to adjust to a lower standard of living even when a lower standard may permit them to maintain a *comfortable* life-style.

The RETIRE Project uses the following definition of income replacement in calculating replacement ratios[6]:

	▶ Preretirement gross salary
Minus	▶ Preretirement income taxes and FICA taxes
Minus	▶ Preretirement savings
Minus	▶ Work-related expenses
Plus/Minus	▶ Changes in age-related expenditures
Plus	▶ Postretirement income taxes
Equals	▶ **Replacement income needed to maintain same standard of living**

Mathematically, the income replacement ratio formula can be written as follows:

$$\text{Replacement ratio} = \frac{\text{PrRGP} - \text{PrRT} - \text{PrRS} - \text{WRE} +/- \text{NCASE} + \text{PoRT}}{\text{PrRGP}}$$

where

PrRGP	=	Preretirement gross pay
PrRT	=	Preretirement taxes
PrRS	=	Preretirement savings
PoRT	=	Postretirement taxes
WRE	=	Work-related expenses
NCASE	=	Net change in age-related expenditures

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Preretirement gross pay (PrRGP) represents the individual's earnings in the year immediately preceding the date of retirement. Preretirement taxes (PrRT) include both federal and state income taxes and Social Security (FICA) taxes. PoRT include federal and state income taxes but exclude FICA taxes, since it is assumed that the person is fully retired. PrRS represent savings amounts that are not replaced at retirement.[8] Work-related expenses (WRE) include items such as commuting costs, special clothing, union and professional dues, and other expenses that are higher for working individuals. Changes in age-related expenditures (NCASE) include changes in health care costs, housing costs, education costs, and other expenditure categories where the consumption patterns may differ significantly between a working status and a retired status.[9] Collectively, changes in the selected age-related expenditures could either increase or decrease after retirement.

The replacement ratio formula attempts to measure the amount of income needed during retirement (i.e., the numerator) as a percentage of preretirement gross pay (PrRGP). The sum of the variables in the numerator represents the amount of income needed in retirement to maintain the individual's same standard of living when taking into consideration reductions in income taxes and Social Security taxes, the elimination of the need for further savings for retirement, reductions in work-related expenditures, and changes in age-related expenditure variables.

Current Income Replacement Ratios

The most recent RETIRE Project Report bases its findings on 1993 FICA tax rates and federal income tax provisions and the 1990 *Consumer Expenditure Survey* data. Survey data for 1991 and later had not been released for public use when the underlying research was conducted for the 1993 RETIRE Project Report.

Single Individual Table 1 contains the line-by-line calculations of income replacement ratios for a single individual retiring at age 65 in 1993. Income replacement ratios are computed for ten separate levels of preretirement salary (i.e., final-year salary), ranging from $15,000 to $90,000.[7]

The following discussion focuses on Lines 12, 13, and 14 of Table 1. These lines display the gross income replacement ratios, Social Security replacement ratios, and *net* income replacement ratios, respectively. Gross income replacement ratios represent the aggregate percentage of preretirement salary needed at the moment of retirement to maintain the individual's current standard of living into the retirement period. Social Security replacement ratios are determined by dividing the retiree's estimated annual Social Security benefits by his or her preretirement salary.[10] Net income replacement ratios are derived by subtracting the Social Security replacement ratio from the gross income replacement ratio. In essence, the net income replacement ratio represents the shortfall in needed income at retirement that must be met from an employer-sponsored retirement plan or from the individual's savings investments program.

It is interesting to examine the pattern of gross income replacement ratios on Line 12—Table 1. The ratios decrease from the $15,000 salary level through the $40,000 level and then increase over the remaining range of preretirement salaries. This pattern is depicted in Figure 1.

Because income replacement ratios were not derived for single individuals in either the 1988 or the 1991 RETIRE Project studies, comparisons with earlier findings cannot be made in a completely consistent fashion. However, the flattened u-shaped pattern of income replacement ratios observed here for single individuals is fairly consistent with similar results for married couples in the 1988 study, but somewhat inconsistent with the income replacement results for married couples in the 1991 RETIRE Project Report. Prior to the release of the findings of the 1988 RETIRE Project, it was commonly believed that income replacement ratios decreased continuously over the range of increasing salaries. As described more fully in a later section, the savings variable (Line 6—Table 1) plays a major role in both the absolute size of income replacement ratios and the shape of the replacement ratio curve.

The decreasing pattern of Social Security replacement ratios (Line 13—Table 1, and Figure 1) is simply a reflection of the underlying nature of the Social Security program. As is widely recognized, Social Security's benefit formula is designed to favor lower-income individuals by providing them with higher income replacement ratios. This pattern of Social Security replacement ratios also explains the pattern of increasing net income replacement ratios as preretirement salaries increase (Line 14—Table 1).

From a retirement planning perspective, it can be argued that the greatest importance should be attached to the net income replacement ratios. However, employees of educational institutions not covered by Social Security (and who otherwise are not eligible for Social Security retirement benefits) should base their retirement income objectives on the gross income replacement ratios (Line 12—Table 1). Further, in this case, the gross income replacement targets should be somewhat higher at lower salary levels than the ratios depicted in Tables 1 and 2.[11]

Married Couple The only consumer unit configuration assumed in both the 1988 and the 1991 RETIRE Project studies consisted of a married couple with one wage earner. It was further assumed that the breadwinner retires at age 65 and has a spouse who is three years younger. In comparison with the earlier single individual scenario, married couples (1) pay lower preretirement and postretirement federal and state income taxes and (2) receive higher Social Security benefits. These differences are reflected in the income replacement ratio calculations shown in Table 2.

The gross income replacement ratios (Line 12—Table 2) are higher for lower salaries (up through $50,000) and slightly lower for higher salaries, in relation to the ratios for single individuals. When

Table 1

Income Replacement Ratios
Single Worker, Age 65

	$15,000	$20,000	$25,000	$30,000	$40,000	$50,000	$60,000	$70,000	$80,000	$90,000
1. Preretirement salary	$15,000	$20,000	$25,000	$30,000	$40,000	$50,000	$60,000	$70,000	$80,000	$90,000
2. Less Social Security taxes	1,148	1,530	1,913	2,295	3,060	3,825	4,441	4,586	4,751	4,876
3. Less federal income taxes	1,445	2,993	2,845	3,855	6,367	8,790	11,217	14,841	16,575	19,369
4. Less state and local income taxes	428	513	693	945	1,562	2,158	2,685	3,241	3,774	4,241
5. Preretirement after-tax income	$12,182	$15,864	$19,546	$22,929	$29,010	$35,246	$41,656	$48,342	$54,922	$61,515
6. Less preretirement savings [$ amount and % of Line 5]	$294 2.4%	$493 3.1%	$617 3.2%	$798 3.5%	$1,208 4.2%	$1,670 4.7%	$2,265 5.4%	$2,951 6.1%	$3,757 6.8%	$4,558 7.4%
7. Less decrease in age- and work-related expenditures	$558	$961	$1,404	$1,671	$1,928	$1,920	$1,687	$1,278	$721	$28
8. After-tax income needed to sustain preretirement standard of living	$11,330	$14,464	$17,536	$20,460	$25,875	$31,656	$37,704	$44,114	$50,444	$56,928
9. Plus postretirement federal income taxes	$0	$0	$377	$682	$1,525	$2,760	$6,175	$8,115	$9,014	$11,718
10. Plus postretirement state and local income taxes	$0	$0	$50	$91	$217	$455	$1,208	$2,028	$3,117	$4,029
11. Total before-tax income needed at retirement	$11,330	$14,464	$17,963	$21,233	$27,615	$34,869	$45,107	$54,257	$63,474	$72,675
12. Gross income replacement ratio [Line 11÷Line 1]*	76.9%	72.3%	71.9%	70.8%	69.0%	69.7%	75.2%	77.5%	79.3%	81.4%
13. Social Security benefits [$ amount and % of Line 1]	$7,020 46.8%	$9,240 46.2%	$10,848 43.4%	$12,084 40.3%	$12,804 32.0%	$13,440 26.9%	$13,572 22.6%	$13,596 19.4%	$13,620 17.0%	$13,644 15.2%
14. Income needed from retirement plan and individual savings [Line 11 minus Line 13] As a % of preretirement salary (Line 1)	$4,310 28.7%	$5,224 26.1%	$7,115 28.5%	$9,149 30.5%	$14,751 36.8%	$21,429 42.9%	$31,535 52.6%	$40,661 58.1%	$49,854 62.3%	$59,031 65.6%

Table 2

Income Replacement Ratios
Married Couple (One Wage Earner), Age 65 Worker, Age 62 Spouse

	$15,000	$20,000	$25,000	$30,000	$40,000	$50,000	$60,000	$70,000	$80,000	$90,000
1. Preretirement salary	$15,000	$20,000	$25,000	$30,000	$40,000	$50,000	$60,000	$70,000	$80,000	$90,000
2. Less Social Security taxes	1,148	1,530	1,913	2,295	3,060	3,825	4,441	4,586	4,751	4,876
3. Less federal income taxes	615	1,365	2,115	2,865	4,365	6,151	8,655	11,082	13,559	16,084
4. Less state and local income taxes	150	355	520	705	1,071	1,496	2,067	2,597	3,088	3,522
5. Preretirement after-tax income	$13,087	$16,770	$20,453	$24,135	$31,504	$38,528	$44,856	$51,735	$58,622	$65,517
6. Less preretirement savings [$ amount and % of Line 5]	$319 2.4%	$494 2.9%	$665 3.3%	$846 3.5%	$1,431 4.5%	$1,835 4.8%	$2,430 5.4%	$3,158 6.1%	$4,000 6.8%	$4,855 7.4%
7. Less decrease in age- and work-related expenditures	$500	$1,017	$1,470	$1,758	$1,954	$1,867	$1,516	$1,015	$356	($443)
8. After-tax income needed to sustain preretirement standard of living	$12,262	$15,233	$18,317	$21,531	$28,219	$34,865	$40,901	$47,564	$54,257	$61,106
9. Plus postretirement federal income taxes	$0	$0	$0	$0	$0	$1,723	$3,107	$4,788	$6,017	$8,503
10. Plus postretirement state and local income taxes	$0	$0	$0	$0	$0	$280	$613	$1,134	$2,170	$3,586
11. Total before-tax income needed at retirement	$12,262	$15,233	$18,317	$21,531	$28,219	$36,875	$44,620	$53,544	$65,343	$73,085
12. Gross income replacement ratio [Line 11÷Line 1]*	81.7%	76.2%	73.3%	71.8%	70.6%	73.8%	74.4%	76.5%	79.2%	81.2%
13. Social Security benefits [$ amount and % of Line 1]	$10,428 69.5%	$12,705 63.5%	$14,010 56.0%	$15,010 50.0%	$17,088 42.7%	$18,480 37.0%	$18,662 31.1%	$18,695 26.7%	$18,728 23.4%	$18,761 20.8%
14. Income needed from retirement plan and individual savings [Line 11 minus Line 13] As a % of preretirement salary (Line 1)	$1,834 12.2%	$2,528 12.6%	$4,307 17.2%	$6,521 21.7%	$11,131 27.8%	$18,395 36.8%	$25,958 43.3%	$34,849 49.8%	$46,615 58.3%	$54,324 60.4%

Figure 1

Replacement Ratio - Single
Ratio Needed to Maintain Living Standard
(Age 65 Retirement)

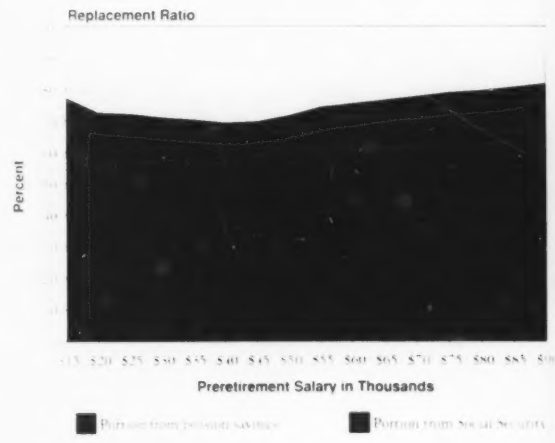
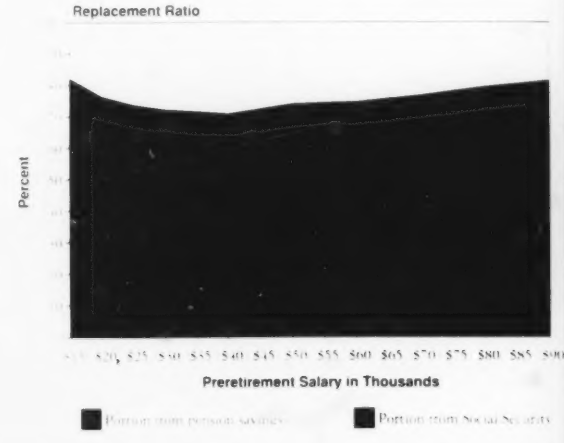

Replacement Ratio
Percent
$15 $20 $25 $30 $35 $40 $45 $50 $55 $60 $65 $70 $75 $80 $85 $90
Preretirement Salary in Thousands
Portion from personal savings
Portion from Social Security

Figure 2

Replacement Ratio - Couple
Ratio Needed to Maintain Living Standard
(Age 65 Retirement/Nonworking Spouse Age 62)


Replacement Ratio
Percent
$15 $20 $25 $30 $35 $40 $45 $50 $55 $60 $65 $70 $75 $80 $85 $90
Preretirement Salary in Thousands
Portion from personal savings
Portion from Social Security

plotted, the gross income replacement ratios depict a flattened u-shaped pattern (see Figure 2) whose shape is consistent with the income replacement ratio pattern observed earlier under the single individual scenario.

Social Security benefits (Line 13—Table 2, and Figure 2) are 37.5 percent higher for married couples, reflecting the extra Social Security amount payable to a 62-year-old spouse based on the earnings history of the breadwinner. As a result, net income replacement ratios (Line 14) are considerably smaller for married couples, particularly at lower preretirement salaries.

Savings Rates and Their Effect on Replacement Ratios

The savings variable exerts great influence on the size of gross income replacement ratios.[12] In addition, the "circular" relationship between savings and replacement ratios suggests that care should be exercised in the interpretation of a particular set of income replacement ratios. "Circularity" in this case means that as preretirement savings decrease, preretirement consumption increases and derived gross income replacement ratios become larger, thereby creating a need for additional savings; similarly, as savings increase to meet a higher replacement ratio, preretirement consumption decreases, and derived gross income replacement ratios become smaller, creating a lesser need for savings.

Table 3 contains the savings rates derived in the 1988, 1991, and 1993 studies. It is evident that savings rates computed in the 1991 study are considerably smaller at lower and middle levels of preretirement salaries, in comparison with the savings rates calculated in the 1988 study. The 1993 RETIRE Project shows a considerable reduction in savings rates at the highest salary levels examined. The overall decline in savings rates measured in the RETIRE Project is consistent with other studies indicating significant declines in individual savings in the United States.

At salary levels through $40,000, the 1993 RETIRE Project gross income replacement ratios (Line 12—Table 2) are generally higher than the comparable ratios in the 1988 study but lower than the ratios derived in the 1991 study. Because of significantly reduced savings rates, together with changes in taxes and work- and age-related expenditures, the 1993 gross replacement ratios at $50,000 and above are higher than the ratios derived in both the 1988 and the 1991 studies. In fact, at the highest levels of preretirement salaries examined, the 1993 gross income replacement ratios are substantially greater than the ratios calculated in the earlier studies.

Table 3

Comparison of Savings Rates* in 1988, 1991, and 1993 Studies

Ages 50-64

Preretirement Salary	1988 Study	1991 Study	1993 Study
$15,000	3.4%	-0.8%	2.4%
$20,000	6.2%	0.1%	2.8%
$25,000	8.0%	1.1%	3.2%
$30,000	9.5%	1.9%	3.5%
$40,000	10.5%	3.8%	4.2%
$50,000	11.7%	5.8%	4.7%
$60,000	12.3%	7.7%	5.4%
$70,000	**	10.0%	6.1%
$80,000	13.0%	12.0%	6.8%
$90,000	**	14.4%	7.4%

* As a percentage of after-tax income

** Salary level not examined

Effects of Taxing 85 Percent of Social Security Benefits

The Clinton administration has proposed taxing up to 85 percent of Social Security benefits for higher-income retirees. Currently, no more than 50 percent of Social Security benefits is taxed. Under both current and proposed legislation, Social Security benefits are not subject to federal income tax if the aggregate of one-half of the Social Security benefits together with "modified adjusted gross income" is below a threshold amount ($25,000 for individuals, $32,000 for married couples).[13]

The calculations of gross income replacement ratios in Tables 1 and 2 are based on the current federal income tax treatment of Social Security benefits. The 1993 RETIRE Project, however, also examined the effects of the Clinton proposal on income replacement ratios. The findings indicate that increasing the taxable portion of Social Security benefits from 50 percent to 85 percent causes a corresponding increase in gross income replacement ratios of 3.5 to 4.1 percentage points for single individuals at preretirement salary levels of $60,000 and above. For married couples, increases of 2.8 to 4.7 percentage points are observed for preretirement salaries of $70,000 and above. At lower preretirement salaries, no change or little change occurred in gross income replacement ratios because the dollar amounts of available exemptions and deductions (for income tax purposes) substantially reduced, or eliminated, the portion of Social Security benefits that was taxed.

Conclusion: The Use of Income Replacement Ratios

The research findings contained in Tables 1 and 2 indicate that individuals/couples retiring in 1993 need approximately 69 percent to 82 percent of final-year salary (adjusted for postretirement inflation) to sustain their preretirement standard of living into their retirement years. After accounting for estimated Social Security benefits, additional retirement income needs range from approximately 26 percent to 66 percent of final-year

salary for single individuals and approximately 12 percent to 60 percent of preretirement salary for married couples, based on the assumptions used in the 1993 RETIRE Project Report.

Gross and net income replacement ratios provide valuable guidelines when used as management and financial planning tools in the larger context of retirement income planning. They provide employers with useful benchmarks in setting their contribution rates and benefit formulas. They are also of considerable value to individuals interested in establishing their own retirement income objectives. However, several critical issues remain that may limit the overall effectiveness of these ratios as measures of needed retirement income.

First, the income replacement ratios presented here should be used simply as guides for individuals in establishing their own retirement income objectives. The RETIRE Project's findings are based on *average* savings, expenditures, and income taxes of subsamples of consumers from whom data are collected in the *Consumer Expenditure Survey*. Consequently, the calculated income replacement ratios themselves represent *averages*, and should not be viewed as the exact amount of retirement income needed by any specific individual. Thus, while published income replacement ratios are guidelines, their availability should not be viewed by individuals as eliminating the need to make replacement ratio calculations based on their own specific savings and expenditure behavior. Worksheets for calculating individualized income replacement ratios are available from several public sources.

Second, because of the circular relationship between preretirement savings and income replacement ratios and the variability in these ratios observed over time (as described earlier), it is recommended that retirement income objectives not be established on the basis of income replacement ratios calculated with respect to any single year. Rather, it is important to develop income replacement targets based on replacement ratio research conducted over a multiyear period. In addition, it must be recognized that because income replacement ratios are partly a function of taxes, calculated ratios will be likely to change any time there is a significant change in FICA taxes or federal or state (and local) income tax laws.

Third, postretirement inflation is not factored into the income replacement ratios provided here. Instead, these ratios represent estimates of the percentages of final-year salaries that are needed during the first year of retirement. To maintain the same standard of living during subsequent years of retirement, the retirement income amounts must be adjusted to compensate for any increases in the cost of living.

Finally, the net income replacement ratios displayed on Line 14 of Tables 1 and 2 assume that anticipated Social Security benefits (Line 13) will be available when the worker retires. In essence, it is assumed that the Social Security program will remain financially solvent and that it will not be transformed into a welfare program where only low-income retirees and their beneficiaries are eligible for retirement benefits. If it is perceived that Social Security retirement benefits will not be available in the future (for whatever reason), or payable only at significantly reduced levels, then retirement planning decisions should focus on gross income replacement ratios, in lieu of net replacement ratios, in establishing retirement income objectives. ❑

Endnotes

[1] President's Commission on Pension Policy, *Coming of Age: Toward a National Retirement Income Policy* (Washington, D.C.: Government Printing Office, 1981).

[2] RETIRE is an acronym for the *Retiree Income Replacement Project*. The RETIRE Project is part of the Retirement Financing Program at the Center for Risk Management and Insurance Research, Georgia State University, Atlanta, Georgia.

[3] Bruce A. Palmer, *1993 GSU/AACG RETIRE Project Report* (Atlanta: The Center for Risk Management and Insurance Research, Georgia State University, 1993).

[4] Bruce A. Palmer, *The Impact of Tax Reform on Wage Replacement Ratios* (Atlanta: The Center for Risk Management and Insurance Research, Georgia State University, 1988); Bruce A. Palmer, *1991 GSU/AACG RETIRE Project Report* (Atlanta: The Center for Risk Management and Insurance Research, Georgia State University, 1991).

[5] U.S. Department of Labor, Bureau of Labor Statistics, *Consumer Expenditure Survey: Interview Survey* (Washington, D.C.: Government Printing Office, annual).

[6] The RETIRE Project Report also presents income replacement ratios calculated under a second formula, referred to as the Tax and Savings Model. This formula ignores changes in work-related expenses (WRE) and age-related expenditures (NCASE) and simply considers savings (PrRS) and differences between preretirement and postretirement taxes (PrRT and PoRT).

[7] Preretirement savings (PrRS) are measured by examining the savings behavior of a group of consumer units whose "reference person" (i.e., head of household) (a) is working and (b) is between the ages of 50 and 64. Other preretirement expenditure behavior is measured in a similar fashion. Postretirement expenditure behavior is measured through the examination of *Consumer Expenditure Survey* data of consumer units where the "reference person" (a) is retired and (b) is between the ages of 60 and 74. Unfortunately, the consumer expenditure data do not permit the calculation of income replacement ratios under the more-preferred longitudinal approach where expenditure and savings patterns of specific individuals and families are monitored over an extended period of time, including periods of retirement as well as active participation in the labor force.

[8] In the tabular presentations of the income replacement ratio calculations, WRE and NCASE have been combined into a singular variable. This was necessary because some of the individual expense categories in the *Consumer Expenditure Survey* data do not permit the separation of the expenditures in terms of whether they are work related or age related.

[9] Consumers with incomes in excess of $100,000 are "top coded" at $100,000 in the *Consumer Expenditure Survey*. Consequently, the RETIRE Project makes no attempt to derive income replacement ratios for individuals and families with incomes of $100,000 or above.

[10] Social Security benefits are estimated by assuming that the individual's wages grew at an annual rate equal to the increase in national average wages.

[11] The basis for this statement is that the RETIRE Project assumes that all retirement income comes either from a tax-deferred retirement plan or from Social Security benefits. It is further assumed that the income from the retirement plan is fully taxable, and the Social Security benefits at lower salary levels will not be taxable.

[12] The RETIRE Project defines "savings" to include (1) net acquisition of stocks and bonds; (2) net investment in farm or business; (3) net change in savings and checking accounts; (4) net change in money owed the consumer unit; (5) net change in U.S. savings bond holdings; (6) contributions to retirement plans; and (7) life insurance surrender proceeds. Admittedly, this is not a perfect measure of savings; indeed, a perfect measure may not even exist! This particular definition is selected because data on these seven items are included in the *Consumer Expenditure Survey*. Although somewhat limited in value as a measure of *absolute* savings, this definition of savings can still be of substantial use as a *relative* measure of savings to depict changes in savings rates that occur over time.

[13] For an extensive treatment of the federal income taxation of Social Security benefits, see, for example, Burton T. Beam, Jr., and John J. McFadden, *Employee Benefits*, 3rd ed. (Chicago: Dearborn Financial Publishing, Inc., 1992), 52.